# *Headquarters U.S. Air Force*

***Integrity - Service - Excellence***

# Natural Infrastructure Management

## Part I: *Lessons Learned*

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# The Paradox

- **DoD has spent $$Billions on Environmental Protection…**
- **DoD is a world leader in *improving* the environment…**
- **Our record of compliance with environmental regulations is superlative**

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# The Paradox

**However:**

- **Encroachment from environmental regulations persists**
- **The public fails to recognize DoD as a key force in environmental sustainment**
- **DoD does not relate military readiness to encroachment and environmental sustainment effectively enough**

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# AF "Top-down" Management Review 2002-2004

- **Air Force Has Been Studying the Relationship Between Environmental Management and Operational Risk.**

- **Organizations Involved:**
  - **Military Planning**
  - **Installation Planning**
  - **Environmental Management**
  - **Weapons Systems Operations**
  - **Acquisition Systems**

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# *Key Observations & Conclusions*

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# Historical Environmental Management

- Environmental Impact Analysis
- Air Quality
- Water Supply and Quality
- Hazardous Waste
- Pollution Prevention
- Critical Habitat
- Cultural Resources
- Noise Pollution

# Has This System Worked?

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- **Successfully Managed the Risk of Non-Compliance**
  - 4,196 Hazardous Waste Cleanup Sites Completed
  - Enforcement Actions down 91% since 1993
- **Successfully Managed Hazardous Material Processes**
- **Solid Waste Reduction Ahead of Goals**
- **More Biodiversity (T&E species/acre) than Any Other Federal Land Manager**

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# *Environmental Regulations are Actually Economic Laws*

**Historical Result of Environmental Laws: *Cost Internalization***

- **Rationing of Natural Resource Supply (Conservation, Permits, Emission Limits)**
- **Creating New Costs (Penalties) and Liabilities**

# Historical Environmental Management (revisited)

- **Air Quality**
- **Water Supply and Quality**
- **Hazardous Waste**
- **Pollution Prevention**
- **Critical Habitat**
- **Cultural Resources**
- **Environmental Impact Analysis**
- **Noise Pollution**

- Resource Rationing
- Reducing “bad” Behavior
- Shift Risk / Cost
- Process, process, process
- Not holisitic

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# Has This System Worked?

- **We Are Very Good At:**
  - **Avoiding Enforcement Actions from Environmental Regulators**
  - **Spending a lot of Money**
  - **Accomplishing Process**
  - **Winning Prestigious Awards**
  - **Protecting Our Workforce and the Public From *Real* Risk From Military Operations**

*We're proud of our accomplishments….*

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# Has This System Worked?

- **We Could Be Better At:**
  - **Preventing Encroachment**
  - **Understanding the Relationship Between our Natural Infrastructure and the Military Mission**
  - **Leveraging Investment and Value**

*…but after 34 years we can do better if the management system is modernized.*

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# *What We're Changing*

- **Focusing Management on the *Entire Natural Infrastructure***
- **Setting Goals to Prevent Encroachment Based On:**
  - **Combat Capability Support**
  - **Performance! (not process…)**
- **Managing the Natural Infrastructure as a *Group of Assets* (not liabilities…)**

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# What Does "*Natural Infrastructure*" Really Mean?

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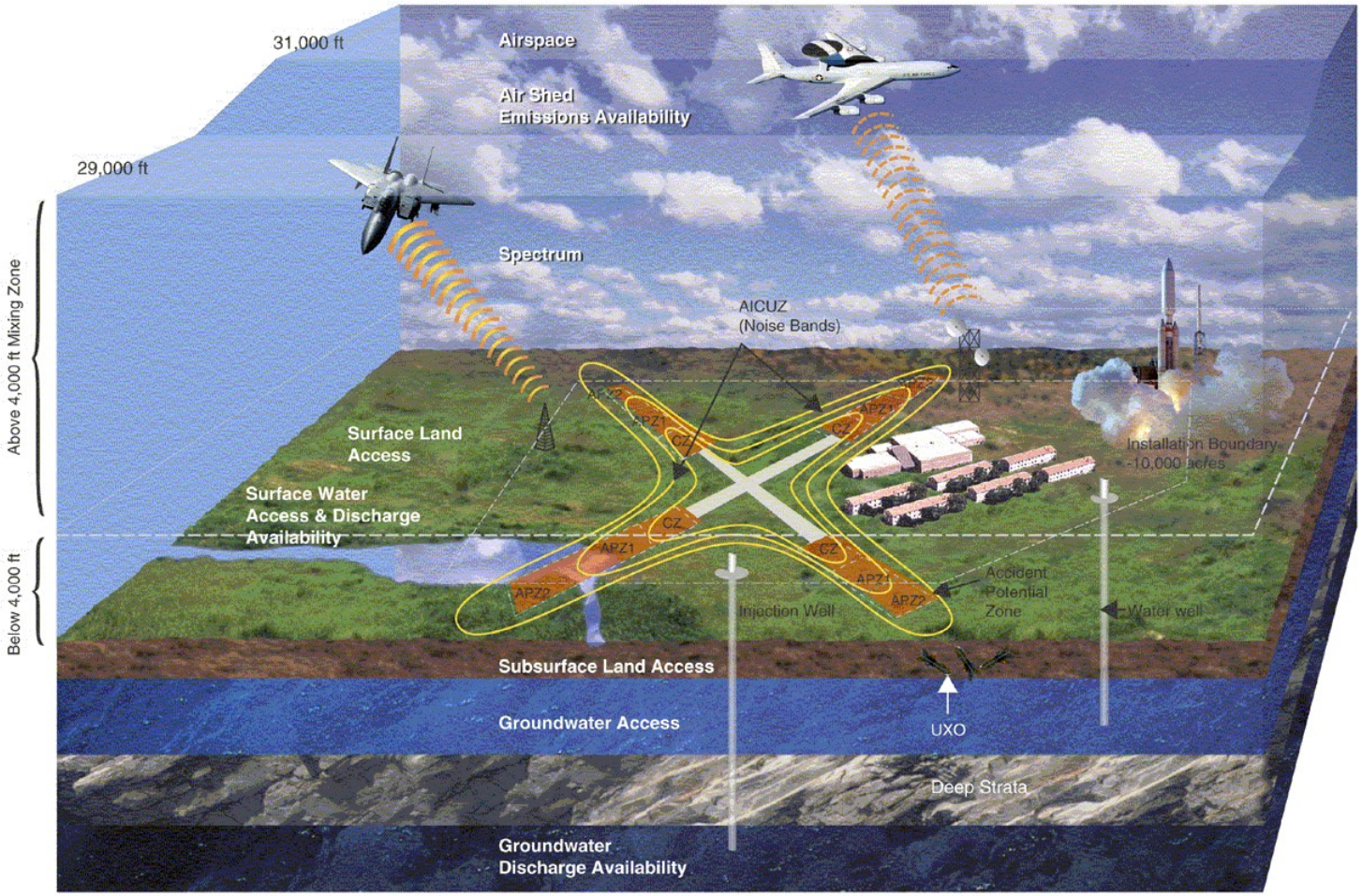
# Visualizing the "Natural Infrastructure"




## Some "Natural Infrastructure" Components

- **Airspace**
- **Air Shed Emissions Availability**
- **AICUZ (Noise Bands)**
- **Groundwater Access**
- **Groundwater Discharge Availability**
- **Surface Land Access**
- **Surface Water Access & Discharge Availability**
- **Subsurface Land Access**
- **Spectrum**

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# Characterizing the "Natural Infrastructure"

| Resource | Air | Water | Land |
|---|---|---|---|
| Operational Attribute* | •Airshed (emission carrying capacity<br>•Airspace<br>•Airwaves (spectrum) | •Watershed (Supply, Quality, Discharge capacity)<br>•Ecology | •Area<br>•Ecology<br>•Discharge Capacity |
| Asset** | •Emissions permit<br>•Special Use Airspace<br>•Frequency Allocations | •Water rights<br>•Discharge Permit<br>•Recharge capacity<br>•Wetlands/Species | •Cantonement / Support Services<br>•Buffer Zone<br>•Training Areas<br>•Material disposal capacity<br>•Species Habitat |

* - Analyze with Resource Capacity Model (RCM)

** - Analyze with Resource Valuation Model (RVM)

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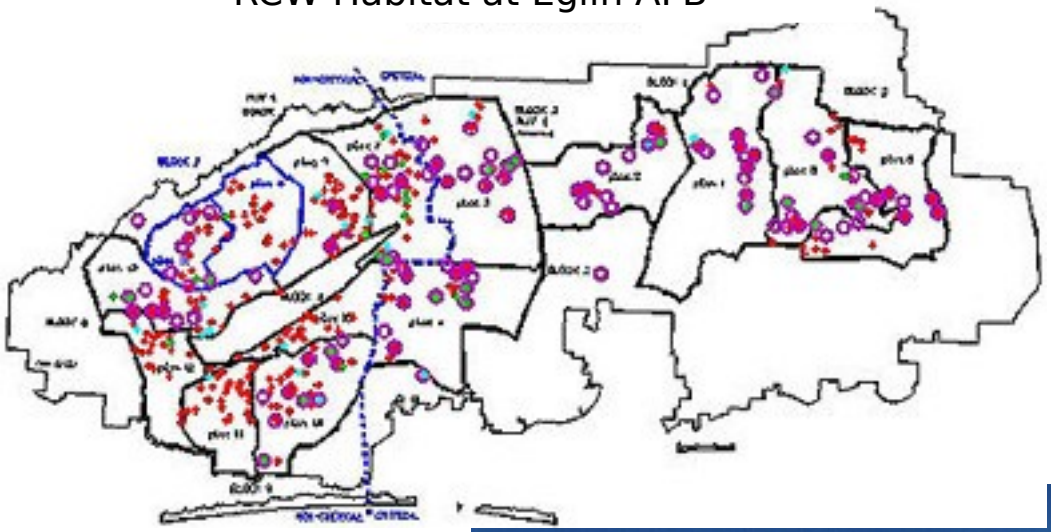
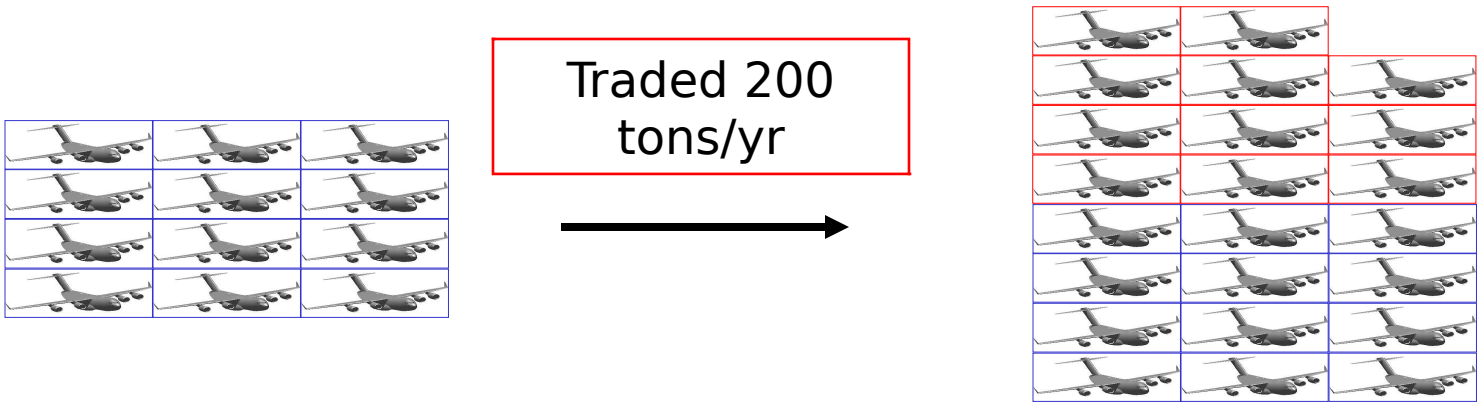
# What We Need to Value ($)…

RCW Habitat at Eglin AFB



# Transformation In Action: McGuire AFB

- Replacing C-141s with C-17s
- Ozone Non-attainment Area
- Near Limit on $NO_X$ "Budget"
- P2 Efforts Created "Head Room" in VOC "Budget"
- Traded VOC "Head Room" for $NO_X$
- Doubled Mission Capacity



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# *What Can You Do Now?*

## Think / Plan in Terms of *Natural Infrastructure Requirements*

- **Example: C-130 Beddown;**
- **You know and plan for:**
  - ***How many people / What specialties…***
  - ***What equipment / Hangar space…***
  - ***Security / Communications, etc. etc.***

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# *What Can You Do Now?*

- **But, what type, what condition, and how much:**
  - ***Airspace?***
  - ***Water?***
  - ***Land?***

- **Develop a *Natural Infrastructure Statement of Needs*** **(affirmative opportunity to incorporate mission requirements before Environmental Impact Analysis)**

Natural Infrastructure Management

# Thank You

Part I: *Lessons Learned*

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**Deputy Assistant Secretary US Air Force**